A NEW ORGAN IN MALE ZYGAENID MOTHS (LEPIDOPTERA: ZYGAENIDAE: PROCRIDINAE)

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Abstract

A new structure is described comprising a brush of expansible hairs on each side of the thorax in males of some Australian zygaenid moths in the genera *Pollanisus* Walker, *Hestiochora* Meyrick and *Onceropyga* Turner. The structure is described and illustrated and its taxonomic implications are discussed.

Introduction

Recent investigations into the morphology of Australian zygaenids have revealed a discrete organ that is difficult to discern. This structure is rarely visible on dried specimens and was first observed on *Pollanisus viridipulverulenta* (Guérin-Méneville, 1839) and *P. apicalis* (Walker, 1854). It consists of a bunch of hairs of clear colour arranged as a hair-pencil, inserted laterally on each side of the thorax between the prothorax and mesothorax, the individual hairs reminiscent of androconial scales (Fig. 1).

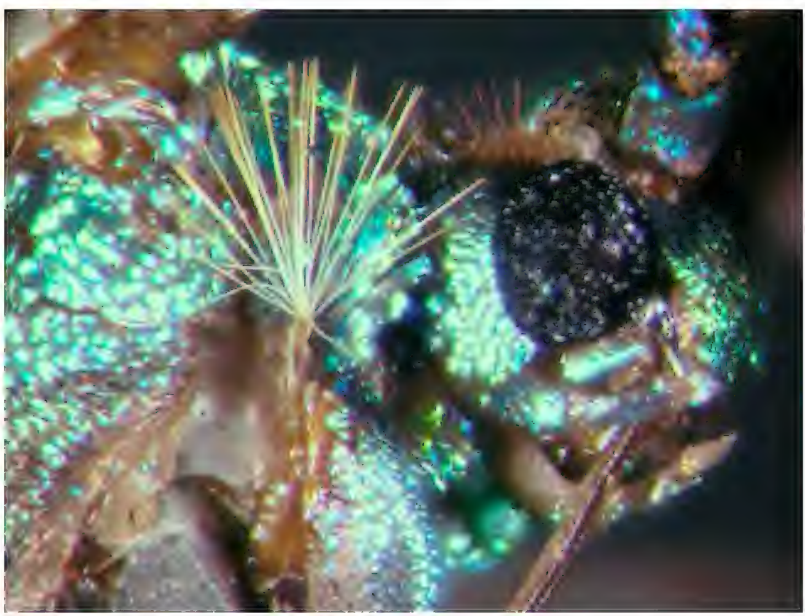
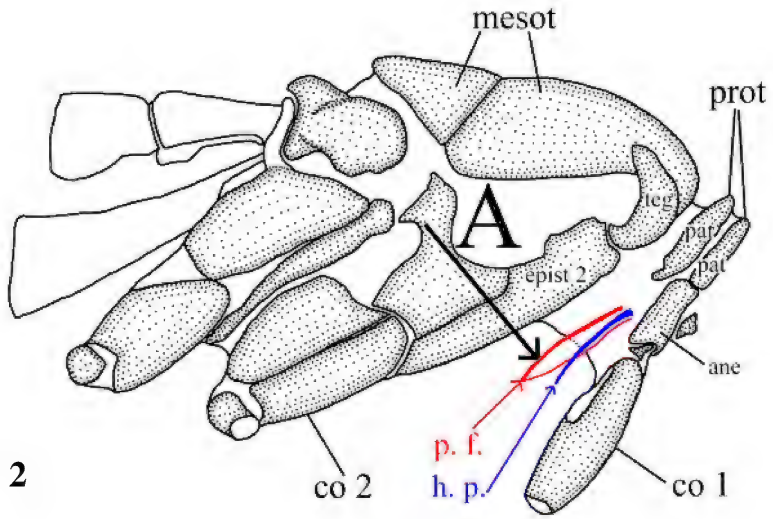
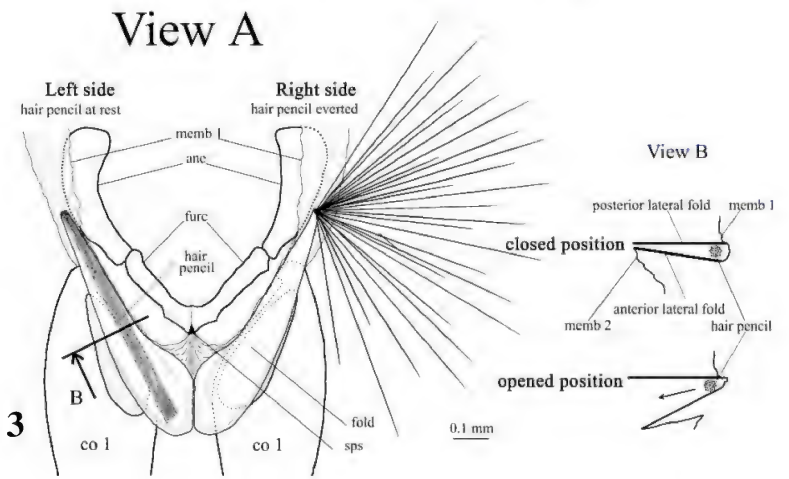


Fig. 1. Everted hair-pencil on the thorax of *Pollanisus viridipulverulenta* male.





Figs 2-3. (2) lateral view of the thoracic segments of *Pollanisus commoni*, imago. ane: anepisternum; co: coxa; epist: episternum; mesot: mesothorax; par: parapatagium; pat: patagium; prot: prothorax; teg: tegula; p.f.: protection fold; h.p: hair pencil. (3) prothorax of *Pollanisus trimacula*, view **A** from mesothorax. Left side with tightly packed bristle stowed in the protecting fold and right side with bristle expanded. ane: anepisternum; furc: furcopleural bridge; memb 1: membrane connected to mesothorax; memb 2: membrane connected to coxa1; sps: spinasternum sectioned.

These hairs are confined within a weakly sclerotized translucent fold, connected to the posterior part of coxa 1 and to the inner skeleton by a fine membranous diaphragm (Fig. 2). This fold covering the densely grouped hairs (20-30) is set distally to allow the 'blooming' of these hairs, in the form of a brush, laterally on the outer side of the thorax (Fig. 3).

Discussion

This organ is present on all the species of *Pollanisus* Walker, 1854 that we were able to dissect, *e.g. P. viridipulverulenta*, *P. apicalis*, *P. empyrea* (Meyrick, 1888), *P. cupreus* (Walker, 1854), *P. lithopastus* Turner, 1926, *P. commoni* Tarmann, 2004, *P. contrastus* Tarmann, 2004, *P. eumetopus* Turner, 1926, *P. angustifrons* Tarmann, 2004, *P. trimacula* (Walker, 1854), *P. marriotti* Kallies & Mollet, 2011, *P. incertus* Tarmann, 2004, *P. cyanota* (Meyrick, 1886) and *P. calliceros* Turner, 1926. It is also present on those species of *Hestiochora* Meyrick, 1886 that we were able to dissect, *i.e. H. xanthocoma* Meyrick, 1886 and *H. furcata* Tarmann, 2004, and on *Onceropyga anelia* Turner, 1906 (Fig. 5).

A modified organ (Fig. 4) without bristles and lateral fold is also present in *P. calliceros*. In the genus *Hestiochora* the organ looks like a bulbous pocket with soft membranous fold in *H. xanthocoma* (Fig. 7), while it is well developed with a large posterior lateral fold in *H. furcata* (Fig. 6). No bristles were visible on these two species but further specimens must be examined to ascertain whether these bristles were merely lost during the lifetime of the examined specimens or whether the organ is genuinely atrophied. However, the presence of free arms on the furcopleural bridge is another good generic character for *Hestiochora*.

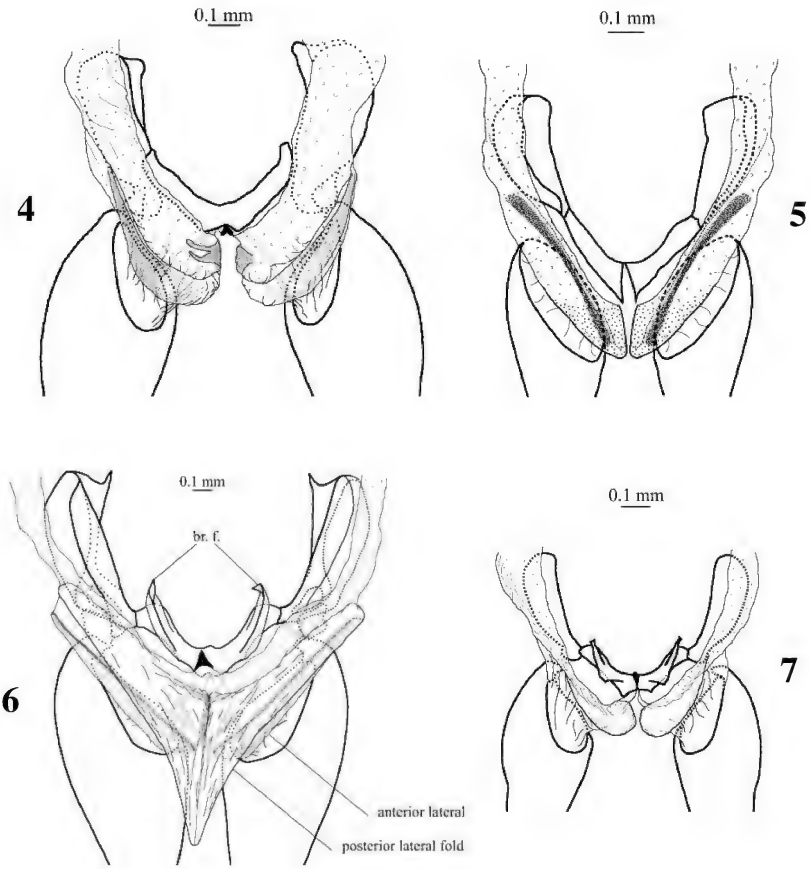
This structure is absent in other Australian Artonini genera, such as *Myrtartona* Tarmann, 2004, and *Australartona* Tarmann, 2004, as well as in other Procridinae, *viz.* species of *Artona* Walker, 1854, *Balatea* Walker,1865, *Lophosoma cuprea* (Walker, 1856), *Ephemeroidea ariel* Hampson, 1893, *E. virescens* Snellen, 1903, species of *Clelea* Walker, 1854, and *Chrysartona* Swinhoe, 1892, *Thibetana sieversi* (Alphéraky, 1892), *T. delavayi* (Oberthür, 1894) and in species of European, Asian and American genera of Prodicrini and in the genus *Zygaena* Fabricius, 1775.

As far as we know, no similar characters that are localized on the thorax in a lateral fold located between the pro- and mesothorax have been found in other Lepidoptera. If the situation in *Pollanisus*, *Hestiochora* and *Onceropyga* is unique, we have another very good autapomorphy for these three Australian genera.

Some *Amuria* Staudinger, 1887 species have also been examined but no setae in the lateral position described above have been observed so far. However, similar hairs were found between the forelegs on the prothorax on *Amuria cyclops* Staudinger, 1887 and one other *Amuria* sp. Also, on *Pseudoamuria*

melaleuca (Jordan, 1908) from New Guinea, two brushes are clearly developed but they appear to be inserted ventrally between the prothoracic coxae rather than laterally, on the outside, as in *Pollanisus*, *Hestiochora* and *Onceropyga*.

Moreover, if this character is typical for *Amuria* and *Pseudoamuria* Tarmann, 2004, it is another argument not to treat the brown '*Artona*' species as *Artona* or *Homophylotis* Turner, 1904, as both genera lack these brushes.



Figs 4-7. Posterior view of prothorax relative to mesothorax: (4) *P. calliceros*; (5) *O. anelia*; (6) *H. furcata*. br. f.: free arms on furcopleural bridge; (7) *H. xanthocoma*.

Due to the paucity of material in collections, no specimens belonging to the genera *Amuria, Pseudoamuria* and *Homophylotis* were completely dissected to check whether any protecting fold, pocket, gland or system connected with such bristles were present.

The function of this organ is unknown.

The taxonomic value of this character at genus level needs to be studied in greater depth, especially for *Pollanisus* and *Onceropyga* and also further specimens of *Hestiochora* need to be examined. On the other hand, the presence of free arms on the furcopleural bridge is another good generic character for *Hestiochora*. The specific differences recognized so far in *Hestiochora* are remarkable (between *H. furcata* and *H. xanthocoma*).

Acknowledgements

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